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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,532	01/09/2002	Joseph E. Oberlander	2002US301	5518

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CLARIANT CORPORATION
ATTENTION; INDUSTRIAL PROPERTY DEPT.
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SOMERVILLE, NJ 08876

EXAMINER

ASHTON, ROSEMARY E

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,532

Applicant(s)

OBERLANDER ET AL.

Examiner

Rosemary E. Ashton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8,9,11-20,22,23,25-35 and 38-47 is/are rejected.
- 7) ☒ Claim(s) 4,7,10,21,24,36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Claims 7,10,21,24,36,37 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 7,10,21,24,36,37 read on the photoresist in the preamble of claims 1,15 and 29 which states the anti-reflective composition is "coated below a positive photoresist". The examiner does not give the photoresist in the preamble weight because the invention of claims 1,15 and 29 is directed to a positive, bottom photoimageable anti-reflective **composition** not a multilayer product or a method, thus, the dependent claims need to be directed to the composition.

The preamble stating the anti-reflective composition is "coated below a positive photoresist" does not serve to further define the anti-reflective composition as recited in section 2111.02 of the MPEP.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 15-19,22,23,29-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Urano et al cited on applicant's IDS.

Urano teaches a positive photoimageable anti-reflective composition (ARC) comprising a photoacid generator (PAG), an anthracene dye and a polymer having acid labile groups such as tBOC vinyl benzene or (CO)OR where R is a t-butyl alkyl group (col. 6, formula 4, R6 is a t-butoxycarbonyl, or t-butyl group). Thus the polymer is a t-butoxycarbonyloxy vinyl benzene as in claims 19 and 32. The PAG is sensitive to 248 nm as in claim 22 as shown in example 1. A triphenylsulfonium PAG may be used (formula 17) which is sensitive to the wavelengths in claim 23.

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4. Claims 1-3,5,6,8,9,11-13,15,16,18-20,22,25-27,29-35,38-40,42-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al cited on applicant's IDS.

Sato teaches a positive bottom photoimageable anti-reflective composition (ARC) comprising a photoacid generator (PAG) and a polymer having acid labile groups such as a t-butyl group or a cyclic lactone. The polymers are i-38 to i-53 and i-59 to i-74 which has both an acid labile unit and a chromophore unit. As shown in Example 6 (d) an alternative composition has a polymer of methyl-adamantyl methacrylate and mevalonic lactone methacrylate, a PAG and a dye of anthraquinone as in claim 15. The ARC is coated on a substrate, covered with a positive photoresist, exposed and developed with tetramethylammonium hydroxide. The k value for the ARC in example 1 is 0.49 and for example 2 it is 0.62 as claimed. The triphenylsulfonium PAGs taught in col. 31 absorb at the wavelengths claimed by applicant.

As to claims 20 and 35 Sato does not teach the k value of the ARC having a separate anthraquinone dye, however, because the other ARC compositions have k values in the range claimed by applicant it is the examiner's position the composition of example 6 (d) in Sato inherently has a k value between 0.1 and 1.0.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14,28,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato cited above in view of Yamashita U.S. publication no. US 2003/0104322 A1.

Sato does not teach the tetramethylammonium hydroxide developer has a surfactant.

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In sections 9 and 16 Yamashita teaches the addition of a surfactant to a the tetramethylammonium hydroxide developer improves wettability and makes possible high resolution.

It would have been obvious to one of ordinary skill in the art to use a surfactant in the tetramethylammonium hydroxide developer of Sato with a reasonable expectation of obtaining an improved developed giving high pattern resolution because Yamashita teaches the addition of a surfactant to a tetramethylammonium hydroxide developer gives this result.

Allowable Subject Matter

7. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach the acid labile group and chromophore are on the same unit.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pavelchek '743 cited on applicant's IDS teaches a negative, bottom ARC for use with a positive or negative photoresist top layer. The examiner finds the patent does not read on claim 42 because the composition is not photoimageable. The composition comprising a polymer, an acid, a crosslinker and a photoacid generator is thermally cured prior to application of the photoresist thus it can not undergo curing upon exposure to radiation during the patterning of the photoresist layer.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosemary E. Ashton whose telephone number is 703-308-2057. The examiner works a flexible work schedule and can normally be reached M-F between 10:00 am – 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached at 703-308-2303.

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The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read "Rosemary Ashton", written in a cursive style.

Rosemary E. Ashton
Primary Examiner
Art Unit 1752

rea
July 28, 2003

**ROSEMARY ASHTON
PRIMARY EXAMINER**